

REMARKS

Claims 19-22 and 24-30 are currently pending in the present application.

Claims 1-18 have been canceled without prejudice to the filing of one or more divisional applications directed to the subject matter thereof. Claim 23 was canceled in Applicants' Amendment submitted on December 7, 2006. Claims 19-22 and 24-28 are amended herein.

Claims 19 and 28 have been amended to more particularly point out and distinctly claim an aspect of Applicants' invention directed to *reduced* carbon fiber content of at least one surface of the article substrate comprised of the metal-graphite material. Support for the amendments made herein to claims 19 and 20 can be found in Applicants' specification, for example, at page 5, lines 13-21. These amendments to claims 19 and 28 are for the purpose of clarifying the reduced carbon fiber content of the material at a surface thereof and are not narrowing amendments. Claims 20-22 and 24-27 have been amended merely to conform with amendments made to claim 19. Amended claims 20-22 and 24-27 are no narrower than previously presented.

Applicants respectfully submit that the amendments made herein to claims 19-22 and 24-28 introduce no new matter. Moreover, *as explained further below*, Applicants respectfully submit that the amendments made to claims 19 and 28 place the application in condition for allowance. At the very least, Applicants respectfully submit that the amendments made herein to claims 19 and 28 place the application in a better condition for appeal by sufficiently addressing the Examiner's rejections of claims 19 and 28 under 35 U.S.C. §112, second paragraph, thus reducing the number of issues in any necessary appeal. This response contains a complete listing of all claims ever presented including the amendments made herein in accordance with 37 C.F.R. §1.121(c)(i). Accordingly, entry and consideration of the amendments made herein are respectfully requested.

Rejection under 35 U.S.C. §112, 2<sup>nd</sup> Paragraph:

In the final Office Action, the Examiner rejects claims 19-30 under 35 U.S.C. §112, second paragraph, as being indefinite. Specifically, the Examiner contends that it is unclear what is meant by the phrase "substantially free of graphite." (See, the final Office Action, p. 2, ¶ 6). While not necessarily agreeing with the Examiner as to any lack of clarity based on the quoted phrase, as the allegedly objectionable language is referenced in the instant Specification, but rather in an effort to expedite prosecution of the pending claims, Applicants have amended claims 19 and 28 to more particularly point out and distinctly claim this aspect of Applicants' invention.

More specifically, claims 19 and 28 have been amended to specify that the claimed composite metal article comprises a substrate comprised of a metal-graphite material which has a carbon fiber content, and that the substrate has at least one surface with a **reduced carbon fiber content** which is 10% or less of the carbon fiber content of the metal-graphite material. Applicants respectfully submit that the pending claims are clear and definite and comply with the requirements of 35 U.S.C. §112, second paragraph. Accordingly, reconsideration and withdrawal of the Examiner's rejection under 35 U.S.C. §112, second paragraph, are respectfully requested.

Rejections under 35 U.S.C. §102(b):

In the final Office Action, the Examiner rejects claims 19-24 and 28-30 under 35 U.S.C. §102(b), as being anticipated by U.S. Patent No. 5,730,853 of Smith, *et al.* ("Smith"). Additionally, the Examiner rejects claims 19-22 and 26-30 under 35 U.S.C. §102(b), as being anticipated by U.S. Patent No. 3,411,995 of Saubestre, *et al.* ("Saubestre"). The Examiner has argued that each of Smith and Saubestre teaches metal-graphite composite articles wherein a layer of the metal graphite material is cleaned prior to the application of subsequent layers. The Examiner has argued that the cleaning techniques disclosed in Smith and Saubestre provide a metal-graphite material with a layer that is "substantially free of graphite." On this basis, the Examiner continues to argue that the pending claims are anticipated by each of Smith and

Saubestre. Applicants respectfully traverse the Examiner's rejection and the contentions set forth in support thereof for the following reasons.

To begin with, various embodiments of Applicants' claimed invention are directed to a composite metal article which comprises a substrate, a metal-containing intermediate layer disposed on a surface of the substrate and a metal coating disposed on the intermediate layer, *wherein the substrate comprises a metal-graphite material with a carbon fiber content and wherein at least one surface of the metal-graphite material has a **reduced carbon fiber content** which is 10% or less of the carbon fiber content of the material itself.*

It is imperative that the difference between (i) the cleaning of a surface to remove loose carbon particles and other contaminants (*e.g.*, grease, etc.), and (ii) the ***reduction of carbon fiber content*** in the material at at least one surface thereof be recognized.

As explained in Applicants' Specification, the metal-graphite composite material of the inventive articles can be chemically cleaned by ordinary dipping and rinsing operations, etc. (*See*, Applicants' Specification, p. 5, lines 22-29). The described chemical cleaning for removing loose carbon particles and/or other undesirable contaminants which may reside *on the surface* of the material is different from the reduction of carbon fiber content in the carbon material such that at least one surface of the material itself contains less carbon than the remainder of the material. Reduction of carbon fiber content at at least one surface of the material itself is described in Applicants' Specification, for example, at p. 4, line 16, through p. 5, line 12. Thus, for example, glow discharge techniques and oxidation techniques described therein are carried out to reduce carbon fiber content in at least one surface of the material, as opposed to simply cleaning the surface in an ordinary manner to remove loose particles which may be present on the outer surface of the material. With reference to claim 28, it should be noted that the reduction of carbon fiber content (for example, by oxidation) (1) and the cleaning of the surface (2) are separately enumerated elements of the claim. Accordingly, in the clear terms of the claim itself, reducing the carbon fiber content at the surface and cleaning the surface are two distinct elements.

Smith discloses a raw graphite aluminum metal matrix composite which is subjected to a cleaning process which includes ultrasonic agitation and/or immersion in deionized water, only to remove loose graphite particles on the surface of the material. (*See* Smith, col. 5, line 63, through col. 6, line 19).

Smith fails to disclose, either explicitly or inherently, a metal-graphite material having a carbon fiber content in which the carbon fiber content of at least one surface of the material is reduced to an amount of 10% or less than the carbon fiber content of the material itself. Smith does not teach the reduction of carbon fiber content as described in Applicants' Specification. The description of ordinary surface cleaning methods to remove loose graphite particles and other contaminants on the surface prior to plating fails to anticipate the claimed invention.

Similarly, Saubestre describes the removal of free carbon and graphite deposits prior to the plating of an iron surface. Saubestre recommends the removal of oils, greases, residual polishing and buffing compounds by cleaning, pickling and/or by salt bath treatment. Applicants respectfully submit that the ordinary cleaning methods described in Saubestre for removing loose surface carbon particles is not anticipatory of the metal article claimed by Applicants. Saubestre contains no teaching which describes the reduction of carbon fiber content at the surface of a graphite composite material as claimed.

Accordingly, Applicants respectfully submit that neither Smith or Saubestre satisfies the requirements of an anticipatory reference under 35 U.S.C. §102, as neither reference teaches, explicitly or implicitly, each and every element of Applicants' claimed invention. Accordingly, reconsideration and withdrawal of the Examiner's rejections under 35 U.S.C. §102 are respectfully requested.

*Rejections under 35 U.S.C. §103(a):*

In the final Office Action, the Examiner rejects claim 25 under 35 U.S.C. §103(a), as being obvious over Smith, in view of published U.S. Patent Application No. 2003/0024611 of Cornie, *et al.* ("Cornie"). The Examiner has argued that Smith teaches the claimed invention except for a specific reference to the percentage graphite content of the metal-graphite material.

In this regard, the Examiner has relied upon the secondary reference of Cornie to supply the additional element of Applicants' claimed invention. Applicants respectfully submit that the claimed invention is not obvious in view of Smith and Cornie, for the reasons set forth below.

As explained above, Smith fails to teach or suggest Applicants' claimed invention. Smith is directed to the ordinary removal of loose surface particles prior to plating by cleaning methods such as those described in Applicants' Specification to be carried out subsequent to the claimed reduction of carbon fiber content from at least one surface of the metal-graphite material.

Applicants respectfully submit that the Examiner has failed to establish a *prima facie* case of obviousness based upon the combination of Smith and Cornie as neither Smith or Cornie teaches or suggests each and every element of Applicants' claimed invention, namely a substrate comprises of a metal-graphite material having at least one surface with ***a reduced carbon fiber content*** which is 10% or less of the carbon fiber content of the material itself. Moreover, one of ordinary skill in the art would not be motivated by either Smith or Cornie, or any prior art known to Applicants, to subject a metal-graphite material to the additional procedures described in Applicants' Specification in order to reduce the carbon fiber content of the material prior to deposition of an intermediate layer. The prior art merely suggests the cleaning of the surface to remove loose graphite particles and other contaminants. Thus, one of ordinary skill in the art would not reasonably expect to achieve the reduced carbon fiber content of Applicants' claimed invention by carrying out such ordinary cleaning methods designed solely to remove loose particles from the surface of the material.

Accordingly, reconsideration and withdrawal of the Examiner's rejection under 35 U.S.C. §103(a) are respectfully requested.

**Conclusion:**

Applicants respectfully submit that all pending claims, as amended herein, comply with the requirements of 35 U.S.C. §112, second paragraph. Additionally, based on the remarks above, regardless of the clarifying amendments made herein, all claims patentably

distinguish over the prior art of record and known to Applicants. Accordingly, reconsideration, withdrawal of all rejections and a Notice of Allowance are respectfully requested.

If there are any remaining issues which the Examiner feels may be expeditiously addressed by telephone, Applicants' undersigned representative would welcome such a discussion with the Examiner at the number indicated below.

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Respectfully submitted,

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